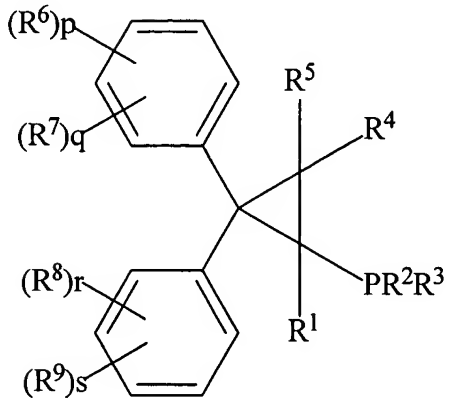
Amendments to the Claims

1. (Original) A phosphine compound of formula (1),



(1)

wherein R^1 is a hydrogen atom, an alkyl group, a cycloalkyl group or a phenyl group which may be substituted; R^2 and R^3 are each, the same or different, an alkyl group, a cycloalkyl group or a phenyl group which may be substituted; R^4 and R^5 are each, the same or different, a hydrogen atom, an alkyl group, a cycloalkyl group or a phenyl group which may be substituted; R^6, R^7, R^8 and R^9 are each, the same or different, an alkyl group, a cycloalkyl group, a phenyl group which may be substituted, an alkoxyl group, a dialkylamino group, a halogen atom, a benzyl group, a naphthyl group or a halogenated alkyl group; R^6 and R^7, or R^8 and R^9 each may be combined to form, a fused ring, a trimethylene group, a tetramethylene group or a methylenedioxy group; p, q, r and s are each an integer of from 0 to 5; and p + q, and r + s are each in the range of from 0 to 5.

2. (Original) A palladium-phosphine complex which can be obtained by reacting the phosphine compound of claim 1 with a palladium compound.

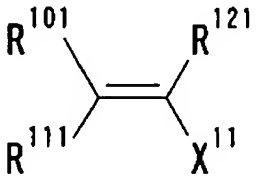
3. (Original) The palladium-phosphine complex of claim 2, wherein the palladium compound is a palladium salt or a palladium complex in which the valency of palladium is 4, 2 or 0.

4. (Currently amended) A manufacturing method of an unsaturated compound or an aromatic compound by the use of palladium-phosphine complexes mentioned in claim 2 ~~or 3~~ as a catalyst.

5. (Original) A manufacturing method of an unsaturated compound or an aromatic compound by the use of the phosphine compound mentioned in claim 1 and a palladium compound.

6. (Currently amended) The manufacturing method of claim 4 ~~or 5~~, which comprises reacting a compound of formula (3) or (4) below:

$$Ar^1(X^1)m^1 \qquad (3)$$



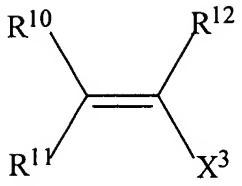
(4)

wherein, in formula (3), Ar^1 is an aryl group which may be substituted or a heteroaryl group which may be substituted; X^1 is a chlorine atom, a bromine atom, an iodine atom, a trifluoromethanesulfonyloxy group, a methanesulfonyloxy group or a para-toluenesulfonyloxy group and m^1 is an integer of 1 to 4, and,

in formula (4), R^{101}, R^{111} and R^{121} are each, the same or different, a hydrogen atom, an alkyl group, an aryl group which may be substituted, a heteroaryl group which may be substituted, an alkoxycarbonyl group or a cyano group; X^{11} is a chlorine atom, a bromine atom, an iodine atom, a trifluoromethanesulfonyloxy group, a methanesulfonyloxy group or a para-toluenesulfonyloxy group,

with a compound, of formula (5) or (6) below,

Ar^2X^2 (5)



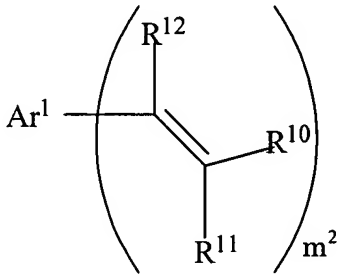
(6)

wherein, in formula (5), Ar^2 is an aryl group which may be substituted or a heteroaryl group which may be substituted; X^2 is $B(OR^{13})(OR^{14})$, $Sn(R^{15})_3$, MgX, ZnX, $Al(R^{15})_2$ or Li, and,

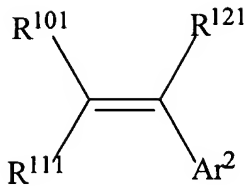
in formula (6), R^{10}, R^{11} and R^{12} are each, the same or different, a hydrogen atom, an alkyl group, an aryl group which may be substituted, a heteroaryl group which may be substituted, an alkoxycarbonyl group or a cyano group; R^{10} and R^{12} may be combined to form a single bond, forming together with the existing double bond a triple bond; X^3 is a hydrogen atom, $B(OR^{13})(OR^{14})$, $Sn(R^{15})_3$, MgX, ZnX, $Al(R^{15})_2$ or Li; R^{13} and R^{14} are each, the same or different, a hydrogen atom, an alkyl group, or, combined to form an ethylene group or a 1,2-dimethylethylene group; R^{15} is an alkyl group, and X is a chlorine atom, a bromine atom or an iodine atom,

to give a compound of formula (7), (8), (9) or (10),

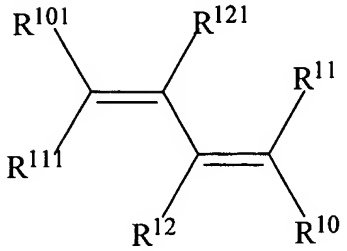
$Ar^1\text{-}(Ar^2)m^2$ (7)



(8)



(9)

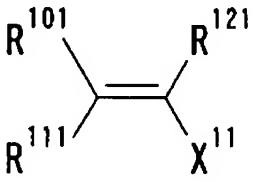


(10)

wherein Ar^1, Ar^2, R^{10}, R^{11}, R^{12}, R^{101}, R^{111} and R^{121} are as defined above and m^2 is an integer of 1 to 4.

7. (Currently amended) A manufacturing method of claim 4 ~~or 5~~, which comprises reacting a compound of formula (3) or (4) below,

$$Ar^1(X^1)m^1 \qquad (3)$$



(4)

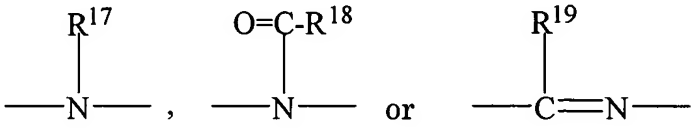
wherein, in formula (3), Ar^1 is an aryl group which may be substituted or a heteroaryl group which may be substituted; X^1 is a chlorine atom, a bromine atom, an iodine atom, a trifluoromethanesulfonyloxy group, a methanesulfonyloxy group or a para-toluenesulfonyloxy group and m^1 is an integer of from 1 to 4, and,

in formula (4), R^{101}, R^{111} and R^{121} are each, the same or different, a hydrogen atom, an alkyl group, an aryl group which may be substituted, a heteroaryl group which may be substituted, an alkoxycarbonyl group or a cyano group; X^{11} is a chlorine atom, a bromine atom, an iodine atom, a trifluoromethanesulfonyloxy group, a methanesulfonyloxy group or a para-toluenesulfonyloxy group,

with an oxygen compound or a nitrogen compound of formula (11) below,

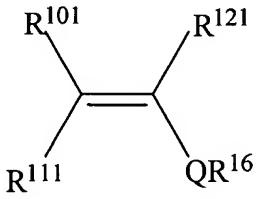
$$R^{16}\text{-}QH \qquad (11)$$

wherein R^{16} is an alkyl group, an aryl group which may be substituted or a heteroaryl group which may be substituted; Q is an oxygen atom,



wherein R^{17}, R^{18} and R^{19} are each a hydrogen atom, an alkyl group, an aryl group which may be substituted or a heteroaryl group which may be substituted; and R^{16} and R^{17} may be combined to form a divalent aromatic ring which may be substituted,
to give a compound of formula (12) or (13) below,

$$Ar^1(QR^{16})m^3 \qquad (12)$$



(13)

wherein Ar^1, Q, R^{16}, R^{101}, R^{111} and R^{121} are as defined above and m^3 is an integer of 1 to 4.

8. (Currently amended) The manufacturing method of claim 4 ~~or 5~~, which comprises reacting an aromatic compound of formula (3),

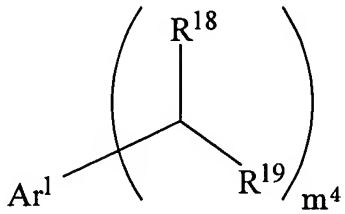
$$Ar^1(X^1)_m{}^1 \qquad (3)$$

wherein Ar^1 is an aryl group which may be substituted or a heteroaryl group which may be substituted; X^1 is a chlorine atom, a bromine atom, an iodine atom, a trifluoromethanesulfonyloxy group, a methanesulfonyloxy group or a para-toluenesulfonyloxy group, and m^1 is an integer of from 1 to 4,

with a carbonyl compound or a cyano compound of formula (14),

$$R^{18}\text{-}CH_2\text{-}R^{19} \qquad (14)$$

wherein R^{18} is a hydrogen atom, CO_2R^{20}, $C(=O)R^{21}$ or a cyano group; R^{19} is CO_2R^{22}, $C(=O)R^{23}$ or a cyano group; R^{20}, R^{21}, R^{22} and R^{23} are each an alkyl group, an aryl group which may be substituted or a heteroaryl group which may be substituted,
to give a compound of formula (15),



(15)

wherein Ar^1, R^{18} and R^{19} are as defined above and m^4 is an integer of 1 to 4.

9. (Currently amended) The manufacturing method of claim 4 ~~or 5~~, which comprises reacting an aromatic compound of formula (3),

$$Ar^1(X^1)_m{}^1 \qquad (3)$$

wherein Ar^1 is an aryl group which may be substituted or a heteroaryl group which may be substituted; X^1 is a chlorine atom, a bromine atom, an iodine atom, a trifluoromethanesulfonyloxy group, a methanesulfonyloxy group or a para-toluenesulfonyloxy group; and m^1 is an integer of from 1 to 4, with carbon monoxide and an alcohol of formula (16),

$$R^{24}OH \qquad (16)$$

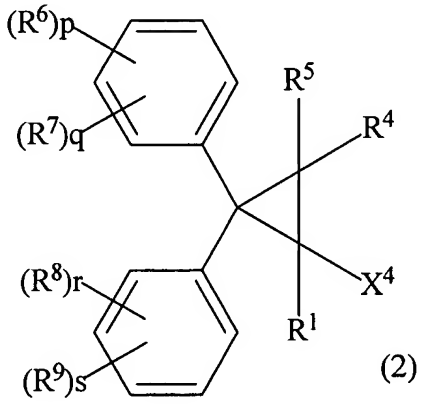
wherein R^{24} is an alkyl group,
to give a carboxylic ester of formula (17),

$$Ar^1(CO_2R^{24})m^5 \qquad (17)$$

wherein Ar^1 and R^{24} are as defined above and m^5 is an integer of 1 to 4.

10. (Currently amended) The manufacturing method of unsaturated compounds, as claimed in ~~any one of claims 4 to 9~~ claim 4, which comprises carrying out the reaction in the presence of a base.

11. (Original) A halogeno compound of formula (2) below,



(2)

wherein R^1, R^4 and R^5 are each, the same or different, a hydrogen atom, an alkyl group, a cycloalkyl group or a phenyl group which may be substituted; X^4 is a halogen atom; R^6, R^7, R^8 and R^9 are each, the same or different, an alkyl group, a cycloalkyl group or a phenyl group which may be substituted, an alkoxy group, a dialkylamino group, a halogen atom, a phenyl group, a benzyl group, a naphthyl group or a halogenated alkyl group; R^6 and R^7,and R^8 and R^9 each may be combined to form a fused ring, a trimethylene group, a tetramethylene group or a methylenedioxy group; p, q, r and s are each an integer of from 0 to 5; and p + q and r + s are each in the range of from 0 to 5.